SEASONAL FLIGHT ACTIVITY OF *LIPOPTENA MAZAMAE* (DIPTERA: HIPPOBOSCIDAE) IN SOUTH CAROLINA[1]

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ABSTRACT: Flying winged adults (volants) of *Lipoptena mazamae* were collected in sticky traps at two of three grain storage sites in southeastern South Carolina that were being sampled for seasonal occurrence of stored-product insects. Of the 42 volants captured during the 55-week test, at least one was caught in every month from April through November. None were caught from December through March. Most were caught in traps placed near wooded areas or heavy shade where deer were likely to travel or feed. Sticky traps provide an alternative to conventional trapping methods for hippoboscids, but have the disadvantage of not providing positive host information.

Lipoptena mazamae Rondani is a parasite of all species and subspecies of deer (*Odocoileus* spp.) and brocket (*Mazama* spp.) wherever the hosts occur in the Neotropical region (Bequaert 1957). It also has been found infrequently and accidentally on domestic cattle. *Lipoptena mazamae* has been found as far south as Argentina and as far north as the states bordering the Gulf of Mexico and up the Atlantic coast into South Carolina (Bequaert 1957). Little is known of its life history and behavior. Because it is essentially a tropical insect, its populations in the United States may fluctuate with the severity of the winter.

Current techniques for the detection and collection of Hippoboscidae can be difficult (Pfadt & Roberts 1978). On live domestic animals, an uncooperative attitude coupled with low numbers of parasites may make them hard to find and the quickness of their movements may make them difficult to catch. Placing newly killed hosts in a bag or screened enclosure may facilitate collections. Collections on large wild animals nearly always requires killing the host and searching a standardized area of its body where the parasites are most likely to occur (Samuel & Trainer 1972). Volants (winged adults) can be collected with sweep nets or by collecting specimens from skin and clothing as the collector walks through a selected area. Both of these methods require a great deal of time and care (Hare 1945).

During a study of the flight activity of stored-product insects around grain bins, we captured *L. mazamae* on sticky traps. Given the scarcity of information on their biology and the complete lack of information on

[1] Received December 7, 1992. Accepted December 28, 1992.

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volants' seasonal occurrence, we report our findings of this insect at the northern end of its range. In addition, we present a collection method that passively catches the parasites with no trauma to their hosts and minimal effort by the collector.

MATERIALS AND METHODS

Sticky traps were used to monitor three sites in southeastern South Carolina for flying insects from 18 March 1987 to 6 April 1988 (55 continuous weeks). Traps consisted of clear flat plexiglass (30.5 cm by 30.5 cm) coated on each side with sticky substance (Tangle-Trap™, Tanglefoot Co., Grand Rapids, Michigan)[3] and held in a vertical position on a wooden stake. Details of trap design and preparation are given in Throne and Cline (1989).

The traps were deployed in two nearly concentric rings around grain storage bins. The inner traps were generally about 0.5 m from the bins and the outer traps varied from 5 to 45 m from the bins to accommodate the cooperator's need to use the space. Four inner and four outer traps were deployed at two sites (Bamberg and Hampton Counties) while five inner and five outer traps encircled the larger third site (Barnwell County). A map detailing the placement of the traps and the surrounding area is given in Throne and Cline (1989). In general, the Bamberg and Hampton County sites were surrounded by cultivated fields with wooded areas within 25 m of the grain bins. The Barnwell County site was surrounded by pasture.

Each trap was exposed for one week after which it was replaced and the exposed surfaces returned to the laboratory for examination. The entire sticky surface (both sides) was examined at a magnification of at least 10X. Hippoboscids were removed, recorded, and stored in vials of alcohol. Identification was determined from characters detailed in Peterson & Maa (1970). Voucher specimens were placed in the U.S. National Museum Collection and in the Florida State Collection of Arthropods.

RESULTS AND DISCUSSION

A total of 42 hippoboscids were collected and all were identified as *L. mazamae*. Most (78.6%) were collected at the Hampton Co. site while 21.4% were collected at the Bamberg Co. site. None were caught at the Barnwell Co. site. At least one volant was caught in every month from

[3] Names of products are included for the benefit of the reader and do not imply endorsement or preferential treatment by USDA.

April through November (Figure 1). None were caught in the four months from December through March. This is similar to the finding of Hare (1945) who found flying adults of a closely related species, *L. depressa* (Say), from late March to early December in California with a peak in July. The deer hosts are present in the area year-round, however, it is unclear whether volants cease to emerge or cease to fly during cold weather.

At the two sites where *L. mazamae* were caught, most were found in the outer traps placed to the south of the grain storage area (44.4% at site 1 and 66.7% at site 2). At both sites, these were the areas either close to woods or near heavy shade. At the Bamberg County site, the south outer trap was placed where deer frequently traveled from a heavily wooded area into a field where either corn or soybeans are usually grown. At the Hampton County site, the south outer trap was placed at the edge of a neglected grove of mature pecan trees where deer presumably come to search for food. The third site was not a very suitable habitat for deer, therefore, it is not surprising that no hippoboscids were caught there. Hare (1945) found that most *L. depressa* (66%) were collected in or near

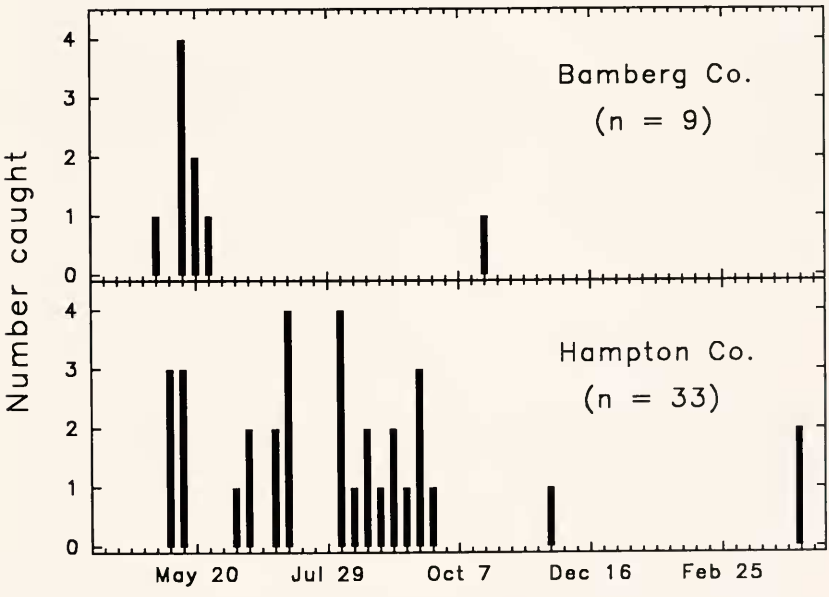

Figure 1. Number of *Lipoptena mazamae* Rondani caught per week on sticky traps at two sites in South Carolina, 1987-88.

the tree shadows bordering wooded areas. A concentrated effort to place traps in areas where hosts are likely to feed and rest would most likely increase the number of volants that are caught. Although sticky traps provide a relatively easy method for collecting hippoboscids, a disadvantage of the method is that they do not provide positive host identification.

ACKNOWLEDGMENTS

We thank Mark Culik and Pat Lang for technical assistance; Messrs. Bates, Peeples, and Rentz for allowing us to conduct this study on their farms; and W. W. Wirth and R. V. Peterson (Cooperating Scientist and Scientist, respectively, USDA-ARS, Systematic Entomology Laboratory) for confirming the identifications and reviewing the manuscript.

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